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ABSTRACT

A systems approach to effective instructional design that is equally applicable to educational and organizational settings includes six components: (1) needs assessment, (2) systems design, (3) curriculum development, (4) organizational development, (5) feedback and evaluation, and (6) outcomes. The last component, outcomes, provides a context and goal design to help focus development efforts. The needs assessment gathers information necessary for designing appropriate instructional strategies: performer demographics; the time a performer spends on various activities; performer knowledge, skills, and attitudes; direction and consequences provided by a performer's manager; policies and/or systems that facilitate or impede performance; methods for monitoring performance; and factors that may affect performance. The design phase for training and development, based on the desired outcomes, derives its direction from the results of the needs assessment. Curriculum development focuses on instructional strategies used to develop the knowledge, skills, and attitudes necessary to perform a job. Organizational development entails the review and modification, if appropriate, of any policies, or procedures required to achieve an outcome. The feedback and evaluation component offers methods for monitoring the effectiveness of the total system and can take four forms: cognitive, affective, behavioral, and results. (HOD)

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AN APPROACH TO DESIGNING TRAINING AND DEVELOPMENT PROGRAMS

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> "Excellence in education means several related things. At the level of the individual learner, it means performing on the boundary of individual ability in ways that test and push back personal limits in school and in the workplace. Excellence characterizes a school or college that sets high expectations and goals for all learners, then tries in every possible way to help students reach them. Excellence characterizes a society that has adopted these policies, for it will then be prepared through the education and skill of its people to respond to the challenges of a rapidly changing world."
>
> A Nation at Risk
> The National Commission on Excellence in Education, 1983

Achieving excellence in some area is the implicit goal of most pre-school through adult educational programs. Achieving excellence requires effective instructional design. Effective instructional design is goal-directed and the goals are continually referenced in the development process. Once goals or outcomes have been identified, the major task is to identify what components influence goal attainment. Then one must determine how these components influence outcomes and design strategies that take into consideration all major components.

Figure 1 presents a model of an approach to instructional design for adult training and development programs. While presented as a linear model for design purposes, it should be recognized that in actual practice the components are not so clearly ordered or distinct.

The model includes six components. The objectives associated with each component are listed below.

Needs Assessment - To obtain sufficient information about the factors that influence the attainment of desired outcomes

Systems Design - To design a wholistic approach to achieving desired outcomes that includes consideration of curriculum, organization and measurement factors

Curriculum Development - To develop instructional packages that will help individuals acquire the competencies necessary to achieve desired outcomes

Organizational Development - To modify organizational policies, procedures, and/or structures to facilitate rather than hinder the attainment of desired outcomes

Feedback and Evaluation - To monitor the progress toward desired outcomes in terms of cognitive, affective, behavioral, and results measures obtained from relevant stakeholders

Outcomes - To provide a context or purpose for the design of jobs, training, development, measurement, and related efforts

Each component is discussed in terms of the approaches used to accomplish these objectives.

Outcomes

Although the last component of the model, outcomes is the most appropriate component with which to begin. Without a context or goal instructional design is pointless.

Outcomes refer to results and need to be assessed in terms of behavioral indicators or the end products of a set of behaviors. They do not refer to the completion of a series of steps or even to the acquisition of information or skills. Rather, they involve the meaningful application of information or skills in such a way that it makes a difference.

In many ways an outcome reflects the mission or vision that guides designers to select various approaches to human development. For line managers outcomes represent bottom-line results with which they are concerned. For both groups desired outcomes determine decision making. If one seeks to reduce costs, one will approach the task differently than if one desires to improve product quality.

Outcomes can be determined by identifying the impact that an individual's behavior has on relevant stakeholders. Stakeholders are identified as anyone who is directly affected by the performance of an individual. For example, the primary stakeholders for a sales position are the salesperson, her/his customers, her/his manager, and internal support personnel.

Table 1 lists potential outcomes for people in three job categories. In a given situation one or more of these may be the focus of a development program. For example, a program for sales development could attempt to improve sales volume, close ratio, and market share by developing product knowledge and closing skills. Knowing what outcomes are important helps focus development efforts.

Traditional training and development can be criticized for failing to make explicit the outcomes toward which it is directed. Without any specified outcomes, the learning process becomes fragmented and nondirective. Learners are left to discover on their own how all the elements fit together and where they lead. Unfortunately, most probably do not make those connections.

Effective development programs are characterized by clearly defined desired outcomes. In addition, these outcomes are prioritized in terms of importance. Consequently, one knows what can and cannot be sacrificed to achieve specified goals.

Table 1

Potential Development Outcomes

Target Audience	Potential Outcomes
Sales	Increased sales volume Increased close ratio Increased client retention Decreased development period Decreased sales cycle Decreased salesperson turnover
Supervision	Increased production Increased job satisfaction Increased suggestions Decreased grievances Decreased down time Decreased rejects
Research and Development	Increased patents Increased copyrights Increased innovative ideas Decreased product failures Decreased development cost Decreased development time

Needs Assessment

Needs assessment involves gathering information necessary to design appropriate strategies for achieving desired outcomes. Typically, a needs assessment will include information in each of the following areas:

Outcomes - Results of effective performance
Background - Demographics for performer and stakeholders
Activities - Time performer spends on various activities
Competencies - Knowledge, skills, and attitudes of performer
Management - Direction and consequences provided by performer's manager
Organizational Factors - Policies and/or systems that facilitate or impede performance
Measurement - Methods for monitoring performance
Priorities - Relative importance of factors affecting performance

Table 2 presents sample questions that would be answered through a needs assessment process.

Table 2

Approaches to Needs Assessment

Type of Information	Discovery Questions
Outcomes	What are the desired results for people performing these jobs? Who is affected and how are they impacted? How are high and moderate performers differentiated? What criteria are applied?
Background	What background is needed to achieve the desired outcomes? What background factors distinguish between high and moderate performers?
Activities	What activites are required to achieve desired outcomes? Where do personnel spend too little, appropriate, or too much time? What patterns in the use of time differentiate high from moderate performers?
Competencies	What competencies (knowledge, skills, and attitudes) are required to achieve the desired outcomes? How is/should each competency be acquired? What competencies distinguish between high and moderate performers?
Management	What can/does a manager do to increase or decrease the likelihood of effective performance?

Organizational Factors	What organizational obstacles may limit performance? What organizational factors help optimize performance?
Measurement	What methods are used to monitor performance and/or outcomes? What methods would be appropriate for monitoring performance and/or outcomes?
Priorities	What are the most important factors affecting the achievement of desired outcomes?

The sample questions reflect a focus on outcomes and an attempt to discover the factors that differentiate those who perform very effectively from those who do not. This orientation helps the assessor select that information that is most directly relevant to the attainment of desired outcomes.

In attempting to answer these questions a variety of approaches can be used. Ideally, the approach would include both qualitative and quantitative methodologies. Qualitative methods are particularly helpful in the initial discovery stages and in later interpretation phases. Quantitative methods help provide evidence of the generalizability of findings and allow for the identification of group differences.

Common methods include individual and group structured interviews, focus groups, observation, and questionnaires. Data can be collected from all relevant stakeholders including managers, clients, coworkers, and support personnel for people in a specified job. The extensiveness of a needs assessment can range from an interview with decision makers to a major multi-method, multi-source study depending on the outcome desired.

Systems Design

The actual design phase for training and development focuses on desired outcomes and derives its direction from the results of the needs assessment. Essentially, three components must be designed in conjunction with one another. These are the curriculum, organizational changes, and feedback/evaluation.

The curriculum is designed to help the performer develop and apply the competencies needed to achieve desired outcomes. Organizational changes may be required to support the application of these competencies on the job and/or to remove other obstacles to performance. Feedback and evaluation must be

designed to provide the performer, her/his manager, and the organization with the information they need to assess how well they are progressing toward the achievement of their objectives. Obviously, these components need to be designed as a total system to work in concert with one another.

The necessary information for designing each of these components can be derived from the needs assessment. For curriculum decisions the information concerning competencies is the most critical, while for organizational changes the information about organizational obstacles is essential. For feedback and evaluation the measurement factors are central. While some information obviously has more direct applications for a particular area, the needs assessment information has implications for all parts of systems design.

Curriculum Development

Curriculum development focuses on instructional strategies for developing the competencies required for goal attainment. Competencies are the knowledge, skills, and attitudes needed to perform a job.

Competencies can be defined in general and/or specific terms. On a general level one might look at the technical, business, personal, and interpersonal competencies necessary for a particular job.

It is probably more useful to look at competencies in terms of clusters of specific behaviors. For example, sales competencies might be identified as follows:

Managing Self - maintaining self discipline and self control
Product Knowledge - acquiring sufficient knowledge about the product or service and its applications
Market Planning - developing a strategy for meeting market needs
Positioning - focusing attention on the appropriate clients within an account
Call Planning - developing objectives and strategies for client calls
Relating - reducing relationship tension and establishing credibility
Discovering - obtaining useful and reliable client information
Preparing - choosing materials and strategies for presentation
Presenting - facilitating a session in which a product or service is advocated
Closing - helping the client commit to a decision
Following-Up - supporting the buying decision

In developing a curriculum for people employed in sales, one might design seminars or modules that cover each of these competencies or combine selected ones according to specific needs.

In order to measure or design modules for competencies it is probably necessary to go another step and specify the behavioral indicators for each competency. An example of behavioral indicators for Relating would be as follows:

Making a good impression on a potential client
Establishing oneself as a useful source of information about the products and services to be sold

Reaching agreement with a client on how to work together
Assuring a client that he/she will be treated fairly
Establishing a climate in which a client's problems can be openly and honestly discussed
Adapting one's approach to the client's personal and business needs

These indicators are measurable and help define further what is meant by the competency labeled Relating. Thus, they provide a framework for the design of specific instructional units.

Organizational Development

Although organizational changes may be difficult and time-consuming to make, they may be essential to outcome attainment. If policies, procedures, methods for appraisal, rewards, etcetera are inconsistent with what is required to achieve an outcome, they must be reviewed and, if appropriate, modified.

One of the most common problems, and quite predictable to a behaviorist, is that the reward system does not reinforce desired behaviors. It is quite typical for an individual to go to a training program, learn new skills, and come to work excited to try out what he/she has learned. Unfortunately, he or she is often faced with coworkers and a manager who say, "we don't do it that way here." This discouragement compounded by the fact that the new behavior feels awkward and may not be initially reinforced makes the individual have second thoughts and go back to doing things the old way.

This problem can often be minimized by training the whole organization or by training the manager to recognize and reinforce desired behaviors. When managers are also held accountable for training results, they have a vested interest in trying to adopt new practices.

A second related problem is that of training people to focus on long term as well as short term objectives but providing compensation for only short term results. This typically happens in sales where people are instructed how to manage client relationships, provide post-sale service, etcetera but are paid for short term sales results. Not only are people directly influenced by the reward system but it conveys subtle messages about what the organization values and expects. These messages, however accurate or inaccurate, have tremendous power in maintaining behavior patterns and resisting change.

Conversely, it is important to identify those organizational factors that will support the achievement of desired outcomes. Before attempting to change the organization, it is critical to assess what practices are supported by current systems. Organizational change can cause new problems as well as solve old ones. Potential impact must be assessed and plans may need to be modified.

Feedback and Evaluation

Methods for monitoring effectiveness should be designed as part of the total system. Feedback tells the individual, her or his manager, and/or the organization how they are progressing and may provide guidance for improvements.

Evaluation tells the designer, planner, and/or organization how effective each component of a system is in achieving its intended purpose. Both feedback and evaluation are conceived as being formative rather than summative. That means that both are meant to help monitor and, thus, serve to guide system modifications toward the desired outcomes.

Approaches to monitoring effectiveness generally take four forms:

Cognitive - knowledge or beliefs
Affective - attitudes or feelings
Behavioral - performance or practices
Results - outcomes or products

In most cases all four are relevant types of measurement to examine, since each provides a different type of information.

Measurement sources can also differ. The list of appropriate sources would vary as a function of the type of information required and type of job being examined. The stakeholders, or parties directly affected by an individual's performance, are all relevant information sources. Most typically this would include the individual performer, her/his manager, her/his clients, and those that provide her/him with support to complete the job.

Obviously some stakeholders have more information about some issues than others. For example, given the sales competencies listed earlier a salesperson and her/his clients are probably in the best position to assess how well the salesperson relates with clients. On the other hand, the client may not have enough information to judge the salesperson's product knowledge or market plan.

Although the applications reported here were developed in business and industry, the basic approach seems equally applicable to pre-school, elementary, secondary, and college settings. While public institutions have tended to avoid stating explicitly the outcomes they seek, the current challenges facing the educational system seem to warrant the shift to more goal-directed approaches. When academic departments and institutions can articulate their goals and demonstrate that they are attainable, they will have taken a major step toward achieving excellence in education.

A SYSTEMS APPROACH TO TRAINING AND DEVELOPMENT